1
00:00:00,000 --> 00:00:04,990
[Music throughout]On January 21, 2019,

2
00:00:05,010 --> 00:00:08,990
for the very first time, NASA’s TESS saw a black hole destroy a star.

3
00:00:09,010 --> 00:00:12,980
This was a tidal disruption event, which occurs when a star

4
00:00:13,000 --> 00:00:16,990
passes too close to black hole. Extreme gravity causes

5
00:00:17,010 --> 00:00:20,990
the star to bulge and break apart into a stream of gas.

6
00:00:21,010 --> 00:00:24,990
The tail of the stream escapes into space, but the rest swings around

7
00:00:25,010 --> 00:00:28,990
to form an accretion disk. This event,

8
00:00:29,010 --> 00:00:32,990
called ASASSN-19bt for the All-Sky Automated

9
00:00:33,010 --> 00:00:36,990
Survey for Supernovae, which first identified it, happened in the TESS

10
00:00:37,010 --> 00:00:40,990
continuous viewing zone. TESS’s four cameras scan large

11
00:00:41,010 --> 00:00:44,990
sectors of the sky, and one constantly monitored this region for a full

12
00:00:45,010 --> 00:00:48,990
year. TESS saw ASASSN-19bt

13
00:00:49,010 --> 00:00:52,990

as soon as it started to brighten, days before other observatories

14
00:00:53,010 --> 00:00:56,990
spotted it. NASA’s Swift satellite

15
00:00:57,010 --> 00:01:00,990
quickly observed the outburst in visible light, UV,

16
00:01:01,010 --> 00:01:04,990
and, along with the European XMM-Newton satellite, X-rays.

17
00:01:05,010 --> 00:01:08,990
The UV measurements are the earliest recorded

18
00:01:09,010 --> 00:01:12,980
for a tidal disruption to date. They showed the event’s temperature

19
00:01:13,000 --> 00:01:16,990
dropped almost 50% in just a few days. Such a steep

20
00:01:17,010 --> 00:01:20,990
decrease has never been seen in a tidal disruption before.

21
00:01:21,010 --> 00:01:24,990
These outbursts are rare, happening only

22
00:01:25,010 --> 00:01:28,990
once every 10,000 to 100,000 years in a galaxy

23
00:01:29,010 --> 00:01:32,990
like our own. Future discoveries will help us

24
00:01:33,010 --> 00:01:36,990
learn even more about these uncommon cosmic blasts.